

## LOCTITE® 420

December 2020

### Product description

LOCTITE® 420 provides the following product characteristics:

<b>Technology</b>	Cyanoacrylate
<b>Chemical type</b>	Ethyl cyanoacrylate
<b>Appearance (uncured)</b>	Transparent, colorless to straw colored liquid
<b>Components</b>	One component – requires no mixing
<b>Viscosity</b>	Very low
<b>Cure</b>	Humidity
<b>Application</b>	Bonding
<b>Key substrates</b>	Plastics, rubbers and metals

LOCTITE® 420 is a general purpose cyanoacrylate instant adhesive.

### Mil-A-46050C

LOCTITE® 420 is tested to the lot requirements of Military Specification Mil-A-46050C. **Note:** This is a regional approval. Please contact your local Technical Service Center for more information and clarification.

### Commercial Item Description A-A-3097:

LOCTITE® 420 has been qualified to commercial item description A-A-3097. **Note:** This is a regional approval. Please contact your local Technical Service Center for more information and clarification.

### Typical properties of uncured material

Specific Gravity @ 25°C	1.05
Viscosity, Cone & Plate, mPa·s (cP):	1 to 4
Temperature: 25°C, shear rate: 3,000 s <sup>-1</sup>	
Viscosity, brookfield - LVF, 25°C, mPa·s (cP):	1 to 5
Spindle 1, speed 6 rpm	
Vapour pressure, hPa	<1
Flash point - see SDS	

### Typical curing performance

Under normal conditions, the atmospheric moisture initiates the curing process. Although full functional strength is developed in a relatively short time, curing continues for at least 24 hours before full chemical/solvent resistance is developed.

### Cure Speed vs. Substrate

The rate of cure will depend on the substrate used. The table below shows the fixture time achieved on different materials at 22 °C / 50% relative humidity. This is defined as the time to develop a shear strength of 0.1 N/mm<sup>2</sup>.

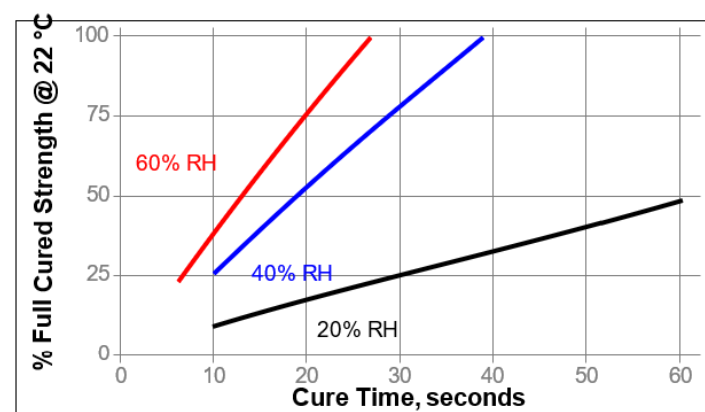
Fixture Time, seconds:	
Mild steel (degreased)	10 to 30
Aluminum (degreased)	5 to 15
Zinc dichromate	30 to 90
Neoprene	<5
Rubber, nitrile	<5
ABS	10 to 30
PVC	3 to 10
Polycarbonate	20 to 60
Phenolic	5 to 20

### Cure speed vs. bond gap

The rate of cure will depend on the bondline gap. Thin bond lines result in high cure speeds, increasing the bond gap will decrease the rate of cure.

### Cure speed vs. humidity

The rate of cure will depend on the ambient relative humidity. The following graph shows the tensile strength developed with time on Buna N rubber at different levels of humidity.



### Cure speed vs. activator

Where cure speed is unacceptably long due to large gaps, applying activator to the surface will improve cure speed. However, this can reduce ultimate strength of the bond and therefore testing is recommended to confirm effect.

**Typical properties of cured material**

After 24 hours @ 22°C

**Physical properties:**

Coefficient of Thermal Expansion, ISO 11359-2, K <sup>-1</sup> :	100×10 <sup>-6</sup>
Coefficient of Thermal Conductivity, ISO 8302, W/(m·K)	0.1
Softening Point, DIN EN 1427, °C	165

**Electrical properties:**

Dielectric Constant / Dissipation Factor, IEC 60250:

0.1 kHz	2 to 3.3 / <0.02
1 kHz	2 to 3.5 / <0.02
10 kHz	2 to 3.5 / <0.02

Volume resistivity, IEC 60093, Ω·cm

2×10<sup>15</sup> to 10×10<sup>15</sup>

Surface resistivity, IEC 60093, Ω

10×10<sup>15</sup> to 80×10<sup>15</sup>

Dielectric Breakdown Strength, IEC 60243-1, kV/mm

25

**Typical performance of cured material****Adhesive properties**

After 24 hours @ 22 °C

Lap shear strength:

Steel (grit blasted)	N/mm <sup>2</sup>	15 to 26 (2,175 to 3,770)
Aluminum (grit blasted)	N/mm <sup>2</sup>	12 to 19 (1,740 to 2,755)
ABS	N/mm <sup>2</sup>	6 to 13 (870 to 1,885)
PVC	N/mm <sup>2</sup>	6 to 20 (870 to 2,900)
Polycarbonate	N/mm <sup>2</sup>	6 to 20 (870 to 2,900)
Phenolic	N/mm <sup>2</sup>	5 to 20 (725 to 2,900)
Neoprene	N/mm <sup>2</sup>	5 to 15 (725 to 2,175)
Nitrile	N/mm <sup>2</sup>	5 to 15 (725 to 2,175)
Tensile strength, ISO 6922:		
Steel	N/mm <sup>2</sup>	12 to 25 (1,740 to 3,625)
Buna-N	N/mm <sup>2</sup>	5 to 15 (725 to 2,175)

"T" Peel Strength, ISO 11339:

Steel (degreased)	N/mm (lb/in)	<0.5 (<2.8)
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After 10 sec @ 22°C

Tensile strength, ISO 6922:

Buna-N	N/mm <sup>2</sup> (psi)	≥6.0 (≥870)
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**Typical environmental resistance**

Cured for 1 week @ 22 °C

Lap shear strength:

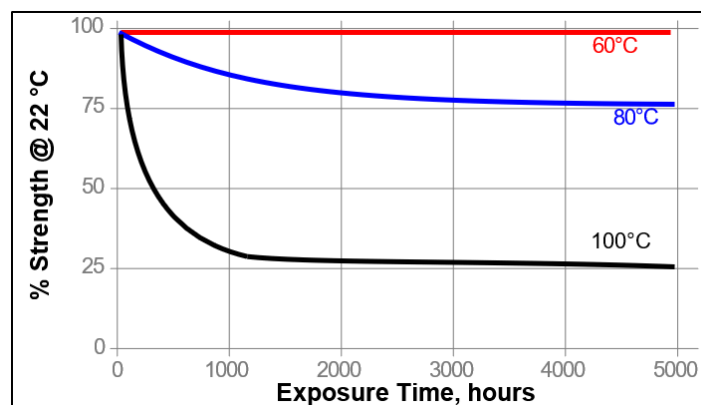
Mild steel (grit blasted)

**Hot strength**

Tested at temperature

**Heat Aging**

Aged at temperature indicated and tested @ 23 °C.

**Chemical/solvent resistance**

Aged under conditions indicated and tested @ 23 °C.

Environment	°C	% of initial strength		
		100 h	500 h	1000 h
Motor oil (MIL-L-46152)	40	100	100	95
Gasoline	22	100	100	100
Isopropanol	22	100	100	100
Ethanol	22	100	100	100
Freon TA	22	100	100	100
1,1,1 Trichloroethane	22	100	100	100
Heat/humidity 95% RH	40	80	75	65
Heat/humidity 95% RH on polycarbonate	40	100	100	100

**General information**

**This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be selected as a sealant for chlorine or other strong oxidizing materials.**

**For safe handling information on this product, consult the Material Safety Data Sheet.**

**Directions for use**

1. For best performance bond surfaces should be clean and free from grease.
2. This product performs best in thin bond gaps (0.05mm).
3. Excess adhesive can be dissolved with LOCTITE cleanup solvents, nitromethane or acetone.

**Storage**

Store product in the unopened container in a dry location. Storage information may be indicated on the product package labeling.

**Optimal Storage: 2°C to 8°C. Storage below 2°C or greater than 8°C can adversely affect product properties.**

Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel Corporation cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Henkel representative.

**Product specification**

The technical data contained herein are intended as reference only and are not considered specifications for the product. Product specifications are located on the Certificate of Analysis or please contact Henkel representative.

**Approval and certificate**

Please contact Henkel representative for related approval or certificate of this product.

**Data ranges**

The data contained herein may be reported as a typical value. Values are based on actual test data and are verified on a periodic basis.

Temperature/Humidity Ranges: 23°C / 50% RH = 23±2°C / 50±5% RH

**Conversions**

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$   
 $\text{kV/mm} \times 25.4 = \text{V/mil}$   
 $\text{mm} / 25.4 = \text{inches}$   
 $\mu\text{m} / 25.4 = \text{mil}$   
 $\text{N} \times 0.225 = \text{lb}$   
 $\text{N/mm} \times 5.71 = \text{lb/in}$   
 $\text{N/mm}^2 \times 145 = \text{psi}$   
 $\text{MPa} \times 145 = \text{psi}$   
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$   
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$   
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$   
 $\text{mPa}\cdot\text{s} = \text{cP}$

**Disclaimer**

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